

### **REMARKS**

Claims 1-25 are pending in this application. In this Response, Applicants have amended certain claims because Applicants believe these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicants respectfully submit that the claim amendments do not limit the range of any permissible equivalents.

In particular, claims 1 and 6 have been rewritten to further clarify the present invention. For example, claim 1 has been rewritten to clarify that the polymeric composite is solution blended, which is different from the conventional methods disclosed by the cited references. Also, claim 6 has been amended to recite a nanoparticle size of about 100 nm or less. As no new matter has been added by the amendments herein, Applicants respectfully request entry of these amendments at this time.

### **Election of Species**

According to the Examiner, claims 1-3 and 5-11 read on the elected species of polybutadiene and nanoparticles. At the present time, claims 4 and 12-25 are not being considered by the Examiner. Applicants respectfully submit, however, that upon allowance of a generic claim, Applicants will be entitled to consideration of claims to additional species (e.g., polybutadiene and polyisoprene, polybutadiene and trans-polyisoprene, cis-polybutadiene and trans-polybutadiene, and cis-polybutadiene, trans-polybutadiene and nanoparticles) that are written in dependent form or otherwise include all the limitations of an allowed generic claim, as provided under 37 C.F.R. § 1.141.

### **Brief Description of the Present Invention**

The present invention is directed to polymeric composites for use in golf balls. As defined in the Specification, the term "polymeric composite" refers to a blend of at least two cements, wherein substantially all of the solvent(s) has been removed, or to a single cement blended with a plurality of nanoparticles. *See* Specification at Page 7, lines 25-27. In addition, the term "cement" refers to a polymer in solution, such as in a solvent of hexane, toluene, or THF. *Id.* at Page 7, lines 1-2. A "cement blend" refers to at least two cements in solution. *Id.* at Page 7, lines 2-3. Finally, as defined in the Specification, "substantially all" of the solvent refers to an amount such that the remaining solvent will not materially affect the properties of the polymeric composite. *Id.* at Page 7, line 33 to Page 8, line 1.

It is well understood that there is great difficulty in blending certain polymer materials having different microstructures. *Id.* at Page 4, lines 6-10. Thus, the present invention's combination of polymers while in solution advantageously facilitates and improves the mixing of the polymers, providing properties unobtainable using conventional mixing or polymerization techniques. *Id.* at Page 10, lines 22-24.

### **THE REJECTIONS UNDER 35 U.S.C. §§ 102 and 103**

#### **Rejection Based Upon Toshiya**

Claims 1-3 and 5-9 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Japanese Patent No. 03-106380 to Toshiya *et al.* of Yokohama Rubber Co. as set forth on page 4 of the Office Action.

Toshiya generally discloses polybutadiene compositions for solid golf balls. *See* Abstract. Because Toshiya is completely silent as to non-conventional methods for forming the polybutadiene compositions, a skilled artisan would have no reason to assume that Toshiya intended to depart from conventional methods of forming rubber-based compositions, *e.g.*, combining ingredients using roll mills and/or internal mixers. For example, bales of rubber and bulk powders may be mixed using a Banbury mixer until a uniform composition is obtained, and then the mixture is dropped through a bottom door of the mixer onto a two-roll mill. *See, e.g.*, Nesbitt '302 at Col. 3, line 64.

In contrast, the present invention is directed to a solution blended polymeric composite, which is formed from a non-conventional method of combining polymers. Thus, reading the claims in light of the Specification (MPEP § 608.01)<sup>1</sup>, the solution blended polymeric composite recited in claim 1 refers to: a) combining at least two cements while still in solution after polymerization to form a cement blend; or b) combining at least one polymer and a plurality of nanoparticles to form a cement blend, and then stripping the cement blend of substantially all of the solvent. *See, e.g.*, Specification at Page 7, lines 25-27 and Page 10, lines 1-3 and 14-18. For example, as recited in claims 6-7, the polymeric composite may include nanoparticles. The nanoparticles are blended with at least one cement while still in solution. *See, e.g.*, Specification at Page 10, lines 14-18.

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<sup>1</sup> A claim may not be read in a vacuum, but instead must be given proper meaning and scope in light of the patent's other claims, its specification, and its prosecution history. *See, e.g., Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995); *See also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

Toshiya is completely silent, however, as to non-conventional methods for mixing rubber-based components and, in particular, the solution blended polymeric composite presently recited in the pending claims. Furthermore, a skilled artisan would have no motivation to use non-conventional methods for forming the disclosed polybutadiene compositions in Toshiya. For this reason, Applicants respectfully submit that Toshiya does not anticipate or render obvious the present invention. Thus, Applicants respectfully request reconsideration and withdrawal of the rejection based on Toshiya.

Rejection Based Upon Sullivan '637

Claims 1-3 and 5-9 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,387,637 to Sullivan as set forth on page 4 of the Office Action. Sullivan '637 does not disclose or suggest the present invention for the reasons that follow.

Sullivan '637 generally discloses polybutadiene compositions for core construction that are formed by intimately mixing the ingredients by using roll mills or internal mixers at temperatures of about 200°F and higher until the composition is uniform. *See, e.g.*, Abstract and Col. 12, lines 55-68. As known to those of ordinary skill in the art, the conventional use of roll mills and/or internal mixers, *e.g.*, Banbury mixers, generally involves mixing powders or other solids. Thus, as well known by those of ordinary skill in the art, the ingredients in Sullivan '637 are separately polymerized and stripped of solution prior to combining in the Banbury mixer and/or roll mills.

In contrast, the present invention is directed to solution blended polymeric composites, which does not involve mixing polymers in a conventional manner, but instead solution blending polymers. *See, e.g.*, Specification at Page 7, lines 25-27 and Page 10, lines 1-3 and 14-18. The conventional blending techniques taught by Sullivan '637, however, require the ingredients to be preheated to melt crystalline domains prior to mixing in a Banbury mixer and/or roll mill (Specification at Page 10, lines 12-13). Thus, the conventional method described in Sullivan '637 would render the present invention unusable because the solution used for blending in the present invention would leak through the bolt holes of the Sullivan '637 mixing equipment and/or would boil off at the Sullivan '637 mixing temperature of 200°F or higher, as well as produce a composition containing undesirable discrete, relatively large domains of discrete polymer (Specification at Page 10, lines 12-13).

Also, with regard to claims 6-7, Sullivan '637 teaches micron size silica particles, *i.e.*, about 1.0 micron to about 18 microns, whereas claim 6 now recites nanoparticles having a particle size of about 100 nm or less (or 0.1 microns).

Therefore, Sullivan '637 does not teach or render the obvious the present invention at least because:

- 1) conventional blending techniques are used in Sullivan '637 to combine the ingredients, whereas the present invention is directed to solution blending of polymers; and
- 2) the Sullivan '637 silica particles are larger than the present invention, *i.e.*, micron size vs. the nanometer size of the present invention.

As such, Applicants respectfully request that the rejection based upon Sullivan '637 be reconsidered and withdrawn.

#### Rejection Based Upon Walker '272

Claims 1-3 and 5-7 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 3,666,272 to Walker *et al.* as set forth on page 4 of the Office Action. Walker '272 does not disclose or even suggest a solution blended polymeric composite, as presently recited, for the reasons below.

The Walker '272 method of combining the polybutadiene composition ingredients is similar, if not identical, to the conventional method taught by Sullivan '637. For example, the Walker '272 method involves the use of polymers that have been separately polymerized and stripped of solvent before mixing in a Banbury mixer or two-roll mill (Col. 1, lines 36-49 and 62-64). The component mixing of Walker '272 occurs at elevated temperatures of 250°F to 350°F. Col. 1, lines 40-49.

As discussed above, the solution blended polymeric composite does not stem from conventional mixing methods. And, mixing ingredients in a two-roll rubber mill or in a Banbury mixer is an unworkable method for use with the present invention because the solution blended polymeric composite must be in solvent form for blending. The solvent stripping occurs only after the polymers have been blended, which produces the solution blended polymeric composite for use in a golf ball, as presently recited in claim 1. Therefore, Walker '272 does not even suggest solution blended polymeric composites, as presently recited. Furthermore, the conventional mixing methods and elevated temperatures required

in Walker '272 would render the present invention unusable because the solvent would leak out of the mixing equipment and/or boil off during mixing.

For the reasons above, Walker '272 does not disclose or suggest the solution blended polymeric composite of the present invention. Therefore, Applicants respectfully request that the rejection based thereon be reconsidered and withdrawn.

Rejection Based Upon Schweiker '238

Claims 1-3 and 5-10 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 3,974,238 to Schweiker *et al.* as set forth on pages 4-5 of the Office Action. For similar reasons as discussed above with respect to Sullivan '637 and Walker '272, Schweiker '238 also does not disclose or suggest the presently recited solution blended polymeric composite.

Schweiker '238 generally discloses admixing the polybutadiene and unsaturated carboxamide at a temperature between the glass transition temperature or melting point of the polymer and the boiling point of the unsaturated carboxamide, suitably about 200°F to 350°F. Col. 2, lines 5-9. The mixing is continued in a two-roll mixer (Col. 3, lines 42-43 and Col. 5, lines 3-4) until a cohesive mass is formed (Col. 2, lines 9-11). Schweiker '238 is completely silent, however, as to the presently recited solution blended polymeric composites. In addition, as known to those of ordinary skill in the art, the Schweiker '238 mixing temperature of 200°F to about 350°F would defeat the purpose of the present invention, *i.e.*, solution blending, because the solvent would boil off at the elevated temperatures taught by Schweiker '238.

Moreover, Schweiker '238 teaches to form a cohesive mass during the mixing process, which indicates that a solid or semi-solid mixture is present in the mixer. In contrast, the solution blended polymeric composite of the present invention is in solution form during the entire blending process and is stripped of solvent only after the polymer blending is complete (Specification at Page 10, lines 1-3).

Thus, Schweiker '238 also does not disclose or suggest the presently recited solution blended polymeric composite of the present invention. Applicants respectfully request reconsideration and withdrawal of the rejection based thereon.

Rejection Based Upon Ihara '381

Claims 1-3, 5, 8, and 11 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,840,381 to Ihara *et al.* as set forth on page 5 of the Office Action.

Like the cited references discussed above, Ihara '381 is also directed to polybutadiene compositions formed by conventional mixing processes. While not expressly recited in Ihara '381, skilled artisans are aware of the process to form rubber thread. For example, U.S. Patent No. 5,861,465 to Hamada *et al.* (cited in the September 25, 2001 Information Disclosure Statement) discloses a conventional method for preparing polybutadiene threads:

The thread rubber may be prepared by mixing the above mentioned components in a mixer (*e.g.*, a kneader or a Banbury mixer) and then extruding it in the form of sheet having a thickness of about 0.5 mm, followed by vulcanizing at a temperature of 100°C to 200°C for 15 to 240 minutes. The resulting vulcanized sheet is cut into threads having a width of 1 to 2 mm.

Col. 4, lines 46-52.

Like Hamada '465, Ihara '381 is completely silent as to unconventional methods of forming the thread rubber. Therefore, one skilled in the art would have no reason to depart from conventional methods of forming thread rubber traditionally used in wound golf balls. Thus, Ihara '381 is completely silent as to solution blending of polymers, as presently recited.

For these reasons, Applicants respectfully submit that Ihara '381 does not disclose or suggest the present invention. As such, Applicants respectfully request that the rejection based on Ihara '381 be reconsidered and withdrawn.

Rejection Based Upon Dalton

Claims 1-3, 5, 8, and 10 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over European Patent No. 0 613 700 to Dalton *et al.* of Acushnet Co. as set forth on page 5 of the Office Action.

Similar to the cited references discussed above, Dalton is also directed to conventional methods of forming polybutadiene compositions for golf balls. For example, Dalton's Example 1 requires mixing of the rubber-based components in a roll mill. Page 4, lines 40-53. Dalton does not even suggest using non-conventional methods of forming the disclosed rubber-based compositions and, therefore, a skilled artisan would have no reason to assume that non-conventional methods may be used to form the compositions provided in Examples 26-28. In particular, Dalton is completely silent as to solution blending the

components in Examples 26-28 to produce a solution blended polymeric composite, as presently recited.

Therefore, Applicants respectfully submit that Dalton does not anticipate or render obvious the present invention. As such, Applicants respectfully request that the rejection based thereon be reconsidered and withdrawn.

#### **ATTORNEY DOCKET NUMBER**

Applicants submitted a Revocation and Power of Attorney on March 13, 2002 for which a Notice of Acceptance was mailed October 9, 2002. While it appears that the new correspondence address has been entered, the attorney docket number has not been changed from 174-934 to 20002.0092. Applicants request that the change in attorney docket number be recorded and acknowledged.

#### **CONCLUSION**

All claims are believed to be in condition for allowance. If the Examiner believes that the present amendments still do not resolve all of the issues regarding patentability of the pending claims, Applicants invite the Examiner to contact the undersigned attorneys to discuss any remaining issues.

A Petition for Extension of Time is submitted herewith to extend the time for response one month to and including March 12, 2003. No other fees are believed to be due at this time. Should any fee be required, however, please charge such fee to Swidler Berlin Shereff Friedman, LLP Deposit Account No. 195127, Order No. 20002.0092.

Respectfully submitted,

SWIDLER BERLIN SHEREFF FRIEDMAN, LLP

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By: 

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**APPENDIX A**  
**MARKED UP VERSION OF THE AMENDED CLAIMS**

Please amend the claims as follows:

1. (Amended) A golf ball comprising a solution blended polymeric composite [which comprises] comprising at least one polybutadiene.
  
6. (Amended) The golf ball of claim 6, wherein the polymeric composite comprises a plurality of nanoparticles having an average size of less than about [5000 nm] 100 nm.